WHAT IS CLAIMED IS:

1. An electronics assembly for relaying data associated with a tire or wheel assembly, said electronics assembly comprising:

a gain circuit characterized by at least one input and at least one output;

a condition-responsive device configured to sense information about its surrounding environment, wherein said condition-responsive device is connected as a feedback element between the at least one input and the at least one output of said gain circuit such that said gain circuit and said condition-responsive device form an oscillator circuit operating at one or more frequencies associated with the condition-responsive device;

an antenna coupled to said oscillator circuit for facilitating the transmission of RF output signals therefrom; and

a control element coupled to said oscillator circuit and configured to selectively control operation of said gain circuit, thus modulating digital data on the RF output signals transmitted from said oscillator circuit.

2. The electronics assembly of claim 1, wherein said gain circuit comprises an operational amplifier or a transistor.

3. The electronics assembly of claim 1, further comprising a power source for supplying power to said control element and said gain circuit.

4. The electronics assembly of claim 3, wherein said power source comprises a battery or a piezoelectric generator.

5. The electronics assembly of claim 1, wherein said condition-responsive device comprises an acoustic wave sensor.

6. The electronics assembly of claim 1, wherein said condition-responsive device comprises a surface acoustic wave (SAW) device with at least three resonator elements for resonating at respective resonant frequencies, and wherein the respective resonant frequencies of the at least three resonator elements collectively provide sufficient information to determine the temperature and pressure levels of said surrounding environment.

7. The electronics assembly of claim 1, wherein the one or more operating frequencies of said oscillator circuit are within a range from about 400 MHz to about 500 MHz.

8. The electronics assembly of claim 1, wherein said control element comprises a microprocessor or a radio frequency identification (RFID) transponder.

9. The electronics assembly of claim 1, wherein said digital data modulated on the RF output signals transmitted from said oscillator circuit corresponds to a unique identification tag.

10. The electronics assembly of claim 1, wherein the bit rate for data modulation effected by said control element is greater than about 0.25 microseconds.

11. The electronics assembly of claim 1, wherein said antenna comprises first and second antenna elements configured for operation as a dipole antenna.

12. A transmitter device for relaying digital data as well as sensed parameter information, said transmitter device comprising:

a first amplifier characterized by at least one input and at least one output;

a condition-responsive device configured to sense information about at least one physical parameter, wherein said condition-responsive device is connected as a feedback element between the at least one input and the at least one output of said first amplifier;

a second amplifier characterized by at least one input and at least one output, wherein the at least one output of said first amplifier is coupled to the at least one input of said second amplifier;

an antenna coupled to the at least one output of said second amplifier for facilitating the transmission of RF output signals at one or more operating frequencies; and

a control element coupled to selected of said first and second amplifiers;

wherein the one or more operating frequencies of said RF output signals provides information about the at least one physical parameter sensed by said

condition-responsive device and wherein the amplitude of said RF output signals relays digital data selectively modulated by said control element.

13. The transmitter device of claim 12, further comprising a power source for supplying power to said control element, said first amplifier and said second amplifier.

14. The transmitter device of claim 13, wherein said power source comprises a battery or a piezoelectric generator.

15. The transmitter device of claim 12, further comprising a matching network connected between said second amplifier and said antenna.

16. The transmitter device of claim 12, wherein said condition-responsive device comprises an acoustic wave sensor.

17. The transmitter device of claim 12, wherein said condition-responsive device comprises a surface acoustic wave (SAW) device with at least three resonator elements for resonating at respective resonant frequencies, and wherein the respective resonant frequencies of the at least three resonator elements collectively provide sufficient information to determine the temperature and pressure levels of said surrounding environment.

18. The transmitter device of claim 12, wherein the one or more operating frequencies of said RF output signals are within a range from about 400 MHz to about 500 MHz.

19. The transmitter device of claim 12, wherein said control element comprises a microprocessor or a radio frequency identification (RFID) transponder.

20. The transmitter device of claim 12, wherein said digital data modulated on the RF output signals by said control element corresponds to a unique identification tag.

21. The transmitter device of claim 12, wherein the bit rate for data modulation effected by said control element is greater than about 0.25 microseconds.

22. The transmitter device of claim 12, wherein said antenna comprises first and second antenna elements configured for operation as a dipole antenna.

23. A tire assembly with integrated electronic components, comprising:

a tire structure;

an electronics assembly integrated with said tire structure and configured to relay data associated with said tire structure, said electronics assembly comprising:

a first amplifier characterized by at least one input and at least one output;

a condition-responsive device configured to sense information about at least one physical parameter associated with said tire structure, wherein said condition-responsive device is connected as a feedback element between the at least one input and the at least one output of said first amplifier such that said first amplifier and said condition-responsive device form an oscillator circuit;

an antenna coupled to said oscillator circuit for facilitating the transmission of RF output signals at one or more operating frequencies; and

a control element coupled to said oscillator circuit;

wherein the one or more operating frequencies of said RF output signals provides information about the at least one physical parameter sensed by said condition-responsive device and wherein the amplitude of said RF output signals relays digital data selectively modulated by said control element.

24. The tire assembly of claim 23, wherein said electronics assembly further comprises a second amplifier characterized by at least one input and at least one output, wherein the at least one output of said first amplifier is coupled to the at least one input of said second amplifier.

25. The tire assembly of claim 23, further comprising a power source for supplying power to said control element and said first amplifier.

26. The tire assembly of claim 25, wherein said power source comprises a battery or a piezoelectric generator.

27. The tire assembly of claim 23, further comprising a matching network coupled to said antenna for optimizing the transmission capabilities of said antenna.

28. The tire assembly of claim 23, wherein said condition-responsive device comprises an acoustic wave sensor.

29. The tire assembly of claim 23, wherein said condition-responsive device comprises a surface acoustic wave (SAW) device with at least three resonator elements for resonating at respective resonant frequencies, and wherein the respective resonant frequencies of the at least three resonator elements collectively provide sufficient information to determine the temperature and pressure levels of said surrounding environment.

30. The tire assembly of claim 23, wherein the one or more operating frequencies of said RF output signals are within a range from about 400 MHz to about 500 MHz.

31. The tire assembly of claim 23, wherein said control element comprises a microprocessor or a radio frequency identification (RFID) transponder.

32. The tire assembly of claim 23, wherein said digital data modulated on the RF output signals by said control element corresponds to one or more of a unique identification tag, tire revolution information, vehicle speed information, tire deflection information, tread wear information, distance traveled, or amount of static and dynamic forces acting on a tire.

33. The tire assembly of claim 23, wherein the bit rate for data modulation effected by said control element is greater than about 0.25 microseconds.

34. The tire assembly of claim 23, wherein said antenna comprises first and second antenna elements configured for operation as a dipole antenna.